Notice of Allowability	Application No.	Applicant(s)	
	10/797,602	EISENHOUR, RONALD S.	
	Examiner	Art Unit	
	Patrick F. O'Reilly III	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Amendment dated October 26, 2009*.

2. ☒ The allowed claim(s) is/are *1-30,52 and 53*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *1/29/2010* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Patrick F. O'Reilly III/
Examiner, Art Unit 3749

Drawings

1. In light of the Replacement Sheet for Figure 6, which was received on October 26, 2009, the drawings in this application are now deemed to be acceptable. Therefore, the drawing objection(s) set forth in the previous Office Action are hereby withdrawn.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kevin L. McHenry, Attorney for Applicant, on January 29, 2010.

3. The claims have been amended as follows:

In **claim 1**, line 5, a comma has been added immediately after the word "core";

In **claim 1**, line 5, the clause --the temperature difference being determined prior to activation of an auxiliary pump-- has been inserted between the newly added comma and the semi-colon;

In **claim 1**, line 5, the word "and", which immediately follows the semi-colon, has been deleted;

In **claim 1**, line 7, the word "an", which immediately precedes the word "auxiliary", has been deleted and the word --the-- has been added in its place;

In **claim 1**, line 8, the period at the end of this line has been deleted and a semi-colon has been added in its place;

In **claim 1**, line 8, the word --and-- has been added immediately after the newly added semi-colon;

In **claim 1**, immediately following line 8, the following clause has been added:

--automatically deactivating the auxiliary pump if the temperature difference is less than a second predetermined temperature difference, the second predetermined temperature difference being less than the first predetermined temperature difference.-- ;

In **claim 52**, line 6, a comma has been added immediately after the word "core";

In **claim 52**, line 6, the clause --the temperature difference being determined prior to activation of an auxiliary pump-- has been inserted between the newly added comma and the semi-colon;

In **claim 52**, line 6, the word "and", which immediately follows the semi-colon, has been deleted;

In **claim 52**, line 8, the word "an", which immediately precedes the word "auxiliary", has been deleted and the word --the-- has been added in its place;

In **claim 52**, line 9, the period at the end of this line has been deleted and a semi-colon has been added in its place;

In **claim 52**, line 9, the word --and-- has been added immediately after the newly added semi-colon;

In **claim 52**, immediately following line 9, the following clause has been added:

--automatically deactivating the auxiliary pump if the temperature difference is less than a second predetermined temperature difference, the second predetermined temperature difference being less than the first predetermined temperature difference.-- ;

In **claim 53**, line 6, the word "a", which immediately precedes the word "second", has been deleted and the word --the-- has been added in its place.

REASONS FOR ALLOWANCE

4. The following is an examiner's statement of reasons for allowance:

The prior art references, neither alone nor in combination, disclose, teach or suggest a method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, or a program product using machine-readable program code to implement such a method, having the combination of elements recited in independent claims 1, 4, 10, 20, 27, 28, and 52 (as amended above).

Specifically, with respect to independent claims 1 and 52, the closest prior art is considered to be that of Japanese Patent No. JP 62055217 A ("JP '217"), Smith Jr., et al. (US 2,156,317), and Feuerecker et al. (US 6,112,543). While the combined teachings of the JP '217 reference, Smith Jr., et al., and Feuerecker et al. may disclose some of the claimed limitations, claims 1 and 52 are clearly patentable over these references, whether considered individually or in combination, because these references fail to disclose, teach, or suggest at least the following claimed elements: (a) "the temperature difference being determined *prior* to activation of an auxiliary pump"; and (b) "automatically *deactivating* the auxiliary pump if the temperature difference is *less* than a *second predetermined temperature difference*, the second predetermined temperature difference being *less* than the first predetermined temperature difference" (emphasis added). Moreover, one of ordinary skill in the art would have no reasonable motivation for modifying the JP '217 base reference so as to overcome the deficiencies recited above. In fact, both the JP '217 base reference and the Feuerecker et al. secondary reference clearly teach away

from any of the abovedescribed claim limitations. In the JP '217 reference, the flow rate of engine cooling water passing through heat exchanger (6) is regulated by a cooling water control valve (5), and not a pump. Refer to JP '217, Figure 3; also refer to previously provided English abstract for JP '217. Also, in JP '217, the determination as to whether to increase the cooling water flow rate is based upon a comparison of the necessary heat-exchanging amount and the actual heat quantity being produced by the heat exchanger (6), and not the temperature difference between the temperature of the coolant entering a heater core and a temperature of the air exiting the heater core as recited in claims 1 and 52 of this application. See previously provided English abstract for JP '217. Moreover, the Feuerecker et al. reference appears to teach controlling the coolant circulation pump (64) therein based upon the difference in the temperature of the coolant entering the heat exchanger (34) and the temperature of the coolant leaving the heat exchanger (34), and not the temperature difference between the temperature of the coolant entering a heater core and a temperature of the air exiting the heater core as set forth in claims 1 and 52. Refer to Feuerecker et al., Figure 1; column 6, lines 32-45. Thus, if one of ordinary skill in the art were to follow the teachings of the JP '217 reference and Feuerecker et al. reference, he or she would clearly be led away from the claimed invention. Consequently, it is irrefutable that any attempt to arrive at the claimed invention would necessarily involve the application of impermissible hindsight reconstruction.

Moreover, with respect to independent claims 4, 10, 20, 27, and 28, the closest prior art is also considered to be that of Japanese Patent No. JP 62055217 A ("JP '217"), Smith Jr., et al. (US 2,156,317), and Feuerecker et al. (US 6,112,543). While the combined teachings of the JP '217 reference, Smith Jr., et al., and Feuerecker et al. may disclose some of the claimed

limitations, claims 4, 10, 20, 27, and 28 are clearly patentable over these references, whether considered individually or in combination, because these references fail to disclose, teach, or suggest at least the following claimed elements: (a) "after increasing the coolant flow rate from the first coolant flow rate, automatically estimating a temperature difference between the temperature of coolant before the coolant enters the heater core and temperature of air exiting the heater core *as if the coolant was at a third flow rate lower than the second flow rate*; and if the estimated temperature difference is less than a second predetermined temperature difference, reducing the flow rate of the coolant to about the third flow rate" (claim 4); (b) "after decreasing the flow rate of the coolant from the second flow rate to the third flow rate, automatically determining a *second temperature difference* between the *temperature of coolant before the coolant enters the heater core* and a *temperature of air exiting the heater core*; and automatically increasing the flow rate of the coolant if the second temperature difference is greater than the first predetermined temperature difference" (claim 10); (c) wherein the *predetermined ratio* used as a basis to estimate the temperature of air exiting the heater core *varie*s with respect to at least one variable operational parameter of an automobile component affecting coolant flow rate" (claim 20); (d) "automatically determining a *temperature difference* between the *automatically measured temperature of the coolant before the coolant enters the heater core* and the *automatically determined temperature of air exiting the heater core*" (claim 27); and (e) "automatically determining Tao of air passing through the heater core utilizing the algorithm: Tao = [(Tci - (Tci - Tai) e(-UA/Cc (1+Cc/Ch))]/(1 + Cc/Ch) and automatically determining a *temperature difference* between the *temperature of coolant at a first flow rate before the coolant enters the heater core* and *Tao*" (claim 28) (emphasis added).

Furthermore, one of ordinary skill in the art would have no reasonable motivation for modifying the JP '217 base reference so as to overcome the deficiencies recited above. In fact, both the JP '217 base reference and the Feuerecker et al. secondary reference clearly teach away from any of the abovedescribed claim limitations. For example, in the JP '217 reference, the determination as to whether to increase the cooling water flow rate is based upon a comparison of the necessary heat-exchanging amount and the actual heat quantity being produced by the heat exchanger (6), and not the temperature difference between the temperature of the coolant entering a heater core and a temperature of the air exiting the heater core as recited in the claimed invention. Refer to JP '217, Figure 3; also refer to previously provided English abstract for JP '217. Also, the Feuerecker et al. reference appears to teach increasing the coolant flow rate (e.g., by controlling the coolant circulation pump 64) based upon the difference in the temperature of the coolant entering the heat exchanger (34) and the temperature of the coolant leaving the heat exchanger (34), and not the temperature difference between the temperature of the coolant entering a heater core and a temperature of the air exiting the heater core as required by the claimed invention. Refer to Feuerecker et al., Figure 1; column 6, lines 32-45. Thus, if one of ordinary skill in the art were to follow the teachings of the JP '217 reference and Feuerecker et al. reference, he or she would clearly be led away from the claimed invention. Consequently, it is irrefutable that any attempt to arrive at the claimed invention would necessarily involve the application of impermissible hindsight reconstruction.

Therefore, because the closest prior art fails to disclose, teach, or suggest numerous limitations set forth in claims 1, 4, 10, 20, 27, 28, and 52, and there is no reasonable motivation for one of ordinary skill in the art to modify the closest prior art references (JP '217, Smith Jr., et

al., and Feuerecker et al.) in such a way so as to cure these deficiencies, independent claims 1, 4, 10, 20, 27, 28, and 52 of this application are clearly patentable over the prior art.

In regard to dependent claims 2-3, 5-9, 11-19, 21-26, 29-30, and 53, these claims are allowable as being dependent, either directly or indirectly, upon allowable independent claims 1, 4, 10, 20, 28, and 52.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick F. O'Reilly III whose telephone number is (571) 272-3424. The examiner can normally be reached on Monday through Friday, 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patrick F. O'Reilly III/
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749